

Case No: 2022-0469 Date of visit: 05/10/2022

Time spent on site: 5 hours Main Inspector:

Site No: FS1280 Site Name: Loch Carnan
Business No: FB0398 Business Name: Loch Duart Ltd

Case Types: 1 DIA 2 3 4 5 6

Water Temp (°C): 12.9 Thermometer No: T309 FHI 045 completed N/A

Observations: Region: WI Water type: S CoGP MA W-17

Dead/weak/abnormally behaving fish present? Y If yes, see additional information/clinical score sheet.
Clinical signs of disease observed? Y If yes, see additional information/clinical score sheet.
Gross pathology observed? Y If yes, see additional information/clinical score sheet.
Diagnostic samples taken? Y

UNI/REG only - if unable to carry out intended visit detail reason below:

Additional Case Information:

Paperwork completed by [REDACTED] 29/09/22, shadowed by [REDACTED]. Disgnostic sampling F1-F5 by [REDACTED], supervised by [REDACTED].

Cleaner fish movement records kept seperately electronically. Copies received.

Vet visit 28/09/22 no report available yet.

Beginning of August first successful freshwater treatment. Second freshwater treatment attempted in the middle of August. Fish did not handle the dewatering well for pumping onto the boat. Treatment was abandoned and not completed for the whole site. Peroxide tarp last week and this week. Peroxide treatment for AGD.

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 Date of Visit: **05/10/2022** Inspector(s): **[REDACTED]**

Registration/Authorisation Details

1. Business/site details summary checked by site representative? **Y**
 2. Changes made to details? **Y**

Site Details (include cleaner fish for all sections)

Total No facilities	18	Facilities stocked	18	No facilities inspected	18
Species	SAL	WRS	WRS		
Age group	2021 S0	2020/2021	mixed		
No Fish	160,000	5,013	9,825		
Mean Fish Wt	1.5kg	50-60g	75-80g		
Next Fallow Date (Site)	April/May 2023		Next Input Date (Site)	October 2023	
Recent (last 4 wks) disease problems?				Y	Any escapes (since last visit)? N
If yes, detail:	Gill issues (PD and CMS not detected, low level HSMI) from environmental insult, AGD and anemia				

Movement Records

1. Movement records available for inspection? **Y**
 2. Date of last inspection: **26/04/2022**
 3. Are records complete and correctly entered? **Y**
 4. Are movement records available for dead fish and waste? **Y**
 5. Are records complete and correctly entered? **Y**
 6. Are health certificates for introductions (outwith GB) available? **N/A**

Transport Records

1. Are any movements carried out by (or on behalf) of the business (not using a STB)? **[REDACTED]**
 If yes, is there a system in place for maintenance of transportation records? **[REDACTED]**

Mortality Records

1. Mortality records available for inspection? **Y**
 2. How are mortalities disposed of? **Other (detail)**
 If other detail: **Whole fish to whiteshore cockles**
 3. Mortality records complete and correctly entered? **Y**
 SAL: w/b 29/8/22: 43,526 morts, 13.64% across the whole site; w/b 05/09/22: 51,259 morts, 18.6% across the whole site; w/b 12/09/22: 28,871 morts, 12.87% across the whole site; w/b 19/09/22 48,262 morts (24.7%) across the whole site; 26/09-28/09/22: 29,625 morts 20.13% across the whole site. WRS: September whole month for the whole site 329 morts.
 4. Recent mortality (last 4 wks):
 5. Evidence of recent increased/atypical mortalities? **Y**
 If yes, facility nos/no mortality per facility/no stock per facility/reason:
SAL: 6 steel cages are most affected (cages 1-6)
 6. Any other peaks in mortality during period checked? **Y**
 If yes, detail: **SAL: very low mortality until above threshold wk 31/2022 (reported); WRS: 1022 morts across the site for the whole month of August.**
 7. Have increased (unexplained) mortalities been reported to vet or FHI? **Y**
 If yes, detail action: **First vet visit 12th August (wk32).**
 8. Have 'mortality events' been reported to FHI? If no, enter details on mortality events sheet. **Y**

Treatments and Medicines Records

1. Recent treatments (see comment)? Y
 If yes, detail:
 If other, detail:
 2. Medicines records available for inspection? Y
 3. Are records complete and correctly entered? Y
 4. Are fish in a withdrawal period? Y
 5. If yes, what treatment(s)?
 If other, detail:
 6. Are medicines stored appropriately? Y

Biosecurity Records

1. Biosecurity records available for inspection?
 2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?
 3. Has the manner and period in which the APB will notify Scottish Ministers or veterinary professional of any *increased (unexplained)* mortality at the site been included?
 4. Has the action that will be taken in the event that the presence or suspicion of the presence of a listed disease is detected been included and *how* and *when* that will be notified to Scottish Ministers?
 5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?
 6. Have the husbandry and biosecurity measures implemented between each epidemiological unit to minimise transmission of disease been covered (movement of staff, visitors, equipment, live or dead fish etc.)?
 7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?
 8. Have the biosecurity procedures been adequately implemented on site?
 If no, detail:

Results of Surveillance

1. Has any animal health surveillance been carried out by, or on behalf of, the business? Y
 2. If yes, are results available for inspection? Y
 3. Any significant results? Y
 If yes, detail (if not detailed under recent disease problems).
 vet visit 12/8/22: AGD and CGD, vet recommends FW treatment over peroxide if required. Histology suggests some cardio and muscular disease, PD and CMS tested negative, heart samples showed low content of PRV (HSMI).
 Records checked between:

Case no: Site No: Date of visit/
Sampling:

Priority samples: VI BA PA MG HI

Time sampling starts/ends: Inspector: VMD No.

Environmental conditions: 1 2 3 4 5

Summary samples HIST BA MG VI PA Total Samples

Add Fish/Pools - click

Pool/Fish No	F1	F2	F3	F4	F5							
Fish nos	1	2	3	4	5							
Pool Group												
Species	SAL	SAL	SAL	SAL	SAL							
Average weight	1.5kg	2kg	2kg	1.5kg	1.3kg							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details		Clachbreac	Clachbreac	Clachbreac	Clachbreac	Clachbreac						
	Stock Origin											
Facility No	5	5	6	6	6							

10/2022 Additional Sample Information:

Total Tests assigned

Case no: 2022-0469

Site No: FS1280

Method of killing: Percussive

Date of visit: 05/10/2022

Inspector(s):

Sheet Relevant: Y

S for strong presence: M for medium presence: W for weak presence

Fish Number		F1	F2	F3	F4	F5				
Time sampled after death (if > 45 minutes)		30min	45min	60min	75 min	90min				
External Signs										
Behaviour	Moribund	S	S	S	S	S				
	Lethargic	S	S	S	S	S				
	Hanging vertical									
	Spiralling									
	Flashing									
	Loss of equilibrium									
Body	Dark									
	Distended abdomen									
	Anorexic	M								
Opercula	Scale Oedema									
	Shortened				M					
	Flared									
Haemorrhaging	Throat									
	Ventrum									
	Base of fins									
	Elsewhere				M					
Eyes	Exophthalmic									
	Enophthalmic (sunken)									
	Cataract									
	Haemorrhagic									
Gills	Pale	S	S	S	S	S				
	Zoned									
	Necrotic									
Lesions	Flank									
	Elsewhere				S					
Vent	Inflamed									
	Trailing faeces									
Lice Load	Estimate numbers			50	30	15				
Internal Signs										
Ascites	Clear		M							
	Bloody	M		M						
Oedema	In tissues									
Heart	Pale/anaemic									
	Granulomas									
	Deformed									
Liver	Petechial haem									
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)	3	2	3	6	3				
	Granulomas									
	Lesions									
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat									
Spleen	Enlarged									
	Granulomas									
Gut	No food present	S	S	S	S	S				
	Yellow pseudo-faeces	S		S	S	S				
	External haem									
	Internal haem									
Body wall	Haemorrhaging									
Swim bladder	Haemorrhaging									
	Fluid filled									
Kidney	Swollen									
	Grey									
	Granular									
	Liquefied									
General	Parasites present									
	Anaemia									

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Date of visit: 05/10/2022

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Additional comments:

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Nature of non-compliance:

Action taken (FHI):

Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology

Case No:	2022-0469	Date of visit:	05/10/2022
Site No:	FS1280	Inspector:	

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 nd Insp
MG-AGD	5/5	10/10/2022		10/10/2022		03/11/2022		
MG-SAL G POX	5/5	10/10/2022		10/10/2022		03/11/2022		
MG- PARA THER	5/5	10/10/2022		10/10/2022		03/11/2022		
MG-IHN	0/5	01/11/2022		02/11/2022		03/11/2022		
MG-IPN	0/5	01/11/2022		02/11/2022		03/11/2022		
MG-ISA	0/5	01/11/2022		02/11/2022		03/11/2022		
MG-PMCV	0/5	01/11/2022		02/11/2022		03/11/2022		
MG-SAV	0/5	01/11/2022		02/11/2022		03/11/2022		
MG-VHS	0/5	01/11/2022		02/11/2022		03/11/2022		
EPIT	2/5	01/11/2022		02/11/2022		03/11/2022		
AMGD	4/5	01/11/2022		02/11/2022		03/11/2022		
GPAT	5/5	01/11/2022		02/11/2022		03/11/2022		
CGDH	5/5	01/11/2022		02/11/2022		03/11/2022		
LPAT	4/5	01/11/2022		02/11/2022		03/11/2022		
SKIN	1/5	01/11/2022		02/11/2022		03/11/2022		
VSPE	3/5	01/11/2022		02/11/2022		03/11/2022		
VVIS	2/5	01/11/2022		02/11/2022		03/11/2022		

Report Summary			
Case Type	Date	Insp	2 nd Insp
DIA	3/11/222		

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0398	DATE OF VISIT	05/10/2022
SITE No	FS1280	SITE NAME	Loch Carnan
CASE No	20220469	INSPECTOR	[REDACTED]

Section 1: Summary

The site was inspected due to sustained mortality reports above the reporting criteria attributed to gill issues. Five fish were selected for diagnostic sampling.

Histopathology examination revealed complex gill issues and some vascular disturbance. Amoebic gill disease and epitheliocystis (likely *Brachiomonas* sp.) were also observed. Mild, multifocal to coalescence hepatic necrosis and nephritis were observed. One fish displayed bacterial ulcerative dermatitis.

Samples tested positive for gill related pathogens: *Paranucleospora theridion* (5/5), salmon gill poxvirus (SGPV) (5/5) and *Neoparamoeba perurans* (AGD) (5/5).

Moritella viscosa was identified on plates taken from kidney material of F4 and F5 and lesion material of F4. This is likely related to the bacterial ulcerative dermatitis observed in histology. The level and purity of growth would suggest that this bacterium would be implicated as the primary source of the lesion in F4, however not the primary source of morbidity overall.

Please contact myself or the duty inspector should you require any further information, have any queries regarding this report or if any problems develop.

Section 2: Case Detail

Observations

The site was inspected due to sustained mortality reports above the reporting criteria attributed to gill issues. At the time of the visit the site was stocked with 2021 S0 stock at an average weight of 1.5kg, as well as farmed and wild caught wrasse. One cage group was more affected than the other. Five fish were selected from two of the worst affected pens for diagnostic sampling.

All five fish sampled displayed moribund and lethargic behaviour prior to removal from the pens. Externally, F1 was anorexic and all five fish had pale gills. F4 had shortened opercula, as well as a lesion and haemorrhaging to the dorsal cranial surface. No lice were observed on F1-F2, F3 had approximately 50 lice of all stages, F4 had approximately 40 lice of all stages and F5 had approximately 15 lice of all stages.

Internally, bloody ascites was evident in F1 and F3, while F2 showed clear ascites. No food was present in the gut of all fish and F1, F3-F5 also had yellow pseudo faeces present.

R09

Samples

Samples were collected from five fish according to the table below:

Fish number	Facility number	Species	Stage	Origin
F1-F2	5	Atlantic salmon	2021 S0, 1,5kg	Clachbreac
F3-F5	6	Atlantic salmon	2021 S0, 1,5kg	Clachbreac

Results

Bacteriology: Kidney, gill and lesion material from five fish was inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated:

- *Moritella viscosa* found in fish: F4 (Kidney, Lesion); F5 (Kidney)
- *Vibrio* sp. (Isolate D) found in fish: F3-F5 (Kidney)
- *Vibrio* sp. (Isolate B) found in fish: F4 (Kidney, Lesion); F5 (Kidney)

The level and purity of growth, of the two isolates of *Vibrio* sp. that were identified, would not suggest these bacteria would be implicated as primary pathogens in this case.

Virology: Tissue samples were tested for segments of nucleic acid indicative of the presence of the pathogens specified below using real-time PCR (qPCR).

Salmon gill poxvirus (SGPV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	20.36	24.37	24.84	24.46	POSITIVE
F2	19.57	25.24	25.23	25.50	POSITIVE
F3	19.86	26.00	26.07	26.01	POSITIVE
F4	19.64	25.96	26.59	26.48	POSITIVE
F5	19.29	26.68	25.82	26.78	POSITIVE

The samples tested negative for infectious haematopoietic necrosis virus (IHNV), infectious pancreatic necrosis virus (IPNV), infectious salmon anaemia virus (ISAV), salmonid alphavirus (SAV), viral haemorrhagic septicaemia virus (VHSV) and piscine myocarditis virus (PMCV).

Parasitology: Tissue samples were tested for segments of nucleic acid indicative of the presence of the parasites specified below using real-time PCR (qPCR).

Neoparamoeba perurans (AGD)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	20.36	25.18	25.03	25.70	POSITIVE
F2	19.57	25.40	26.09	25.29	POSITIVE
F3	19.86	26.50	26.50	26.43	POSITIVE

R09

F4	19.64	27.13	26.84	27.18	POSITIVE
F5	19.29	26.06	25.77	24.84	POSITIVE

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	20.36	32.73	33.08	33.07	POSITIVE
F2	19.57	27.41	27.13	26.55	POSITIVE
F3	19.86	29.89	30.20	30.17	POSITIVE
F4	19.64	32.14	32.41	32.25	POSITIVE
F5	19.29	28.37	27.65	27.12	POSITIVE

Histology: Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen and kidney were taken from five fish. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination by light microscopy revealed the following:

Gill: Lamellar epithelial hyperplasia, hypertrophy and lamellar fusion mild, multifocal. Lamellar congestion, haemorrhage, few lacunae and features of spongiosis observed on the hyperplastic plaques. Several amoeboid cells resembling *Neoparamoeba perurans* observed in F1, F3-F5 and basophilic epithelial inclusions (likely epitheliocystis) observed in F2 & F3. Some autolysis artefacts also observed.

Skin & Muscle: Minimal, multifocal inflammatory cell infiltrated in the dermal layer (F1). F4 lesion: Absence of epidermal layer, marked presence of Gram-negative bacteria on the dermal layer and reaching the musculature underneath, musculature necrosis.

Heart: Presence of some thrombi (F1). F3: No atrium in section.

Gut and pyloric caeca: Minimal peritonitis (F2, F5).

Pancreas: Within the normal range.

Liver: Hepatocellular necrosis, mild, multifocal to coalescence (F1, F2, F3 & F5).

Kidney: Slightly increase of melanomacrophages aggregates (F1). F4 displayed shrunken glomeruli and Bowman's space filled with proteinaceous material and Interstitial cell (haemopoietic) necrosis multifocal, mild and multifocal inflammatory cell.

Spleen: Small foci of necrosis and some empty ellipsoids (F3). Some cuffing (F5).

Signed:

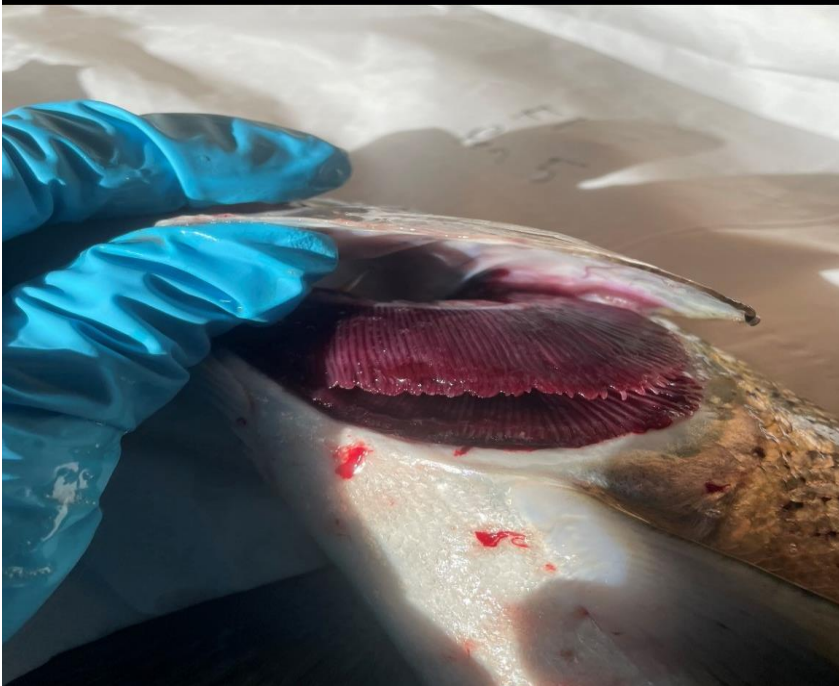


Date: 03/11/2022

Fish Health Inspector

The Fish Health Inspectorate Service Charter detailing standards of service is available on the Marine Scotland website at <https://www.gov.scot/publications/fish-health-inspectorate-service-charter/>

F1





F1
Pen 5



F2





F3







F4





F5





